



Reworking vineyards

Vineyards established in Australia during the 1990s are now reaching the age where owners are considering whether reworking is required. Decisions may be driven by a decline in yield due to poor vine health and/or a breakdown in vineyard infrastructure such as posts and irrigation systems coming to the end of their life expectancy. AWRI senior viticulturist **Tony Hoare** covers some of the key questions asked by vineyard owners about reworking vineyards.

What is reworking?

Reworking is the process of making changes to vine architecture for the purpose of correcting underperforming vine yield or fruit quality. If successful, reworking refreshes a vineyard, improving the existing vines by correcting issues such as trunk disease, non-ideal clonal selection, training problems (e.g. wire wrapping and bent trunks) or general mismanagement. Reworking uses the existing root system, grapevine trunk (in most instances), trellis and irrigation infrastructure.

How do I know when a vineyard needs to be reworked?

A good place to start is by assessing the average vineyard performance over a 10-year period. Fluctuations in yield and fruit quality due to seasonal variation are to be expected; however, if there is a trend of reduced profitability through declining yield and/or fruit quality

over time then reworking may need to be considered. Every vineyard has a maximum production and profitability 'sweet spot', which can be assessed using a number of different tools. Vine balance can be assessed using VitiApp to calculate leaf area index; vine uniformity can be assessed from the air with plant cell density mapping and on the ground with electromagnetic surveys. A simple count of fruiting wood (total buds/metre) versus total area of non-fruiting wood or gaps on wire can also provide the information about when it is time to rework.

What is the best option for reworking?

The best reworking option is the one that delivers the maximum productivity improvement to the vineyard over the longest period of time for the lowest cost. The type and scope of reworking depends on the reason for reworking. Trunk disease, especially *Eutypa lata*,

is a major reason for reworking. Wine Australia has published a step by step guide for decision-making in vineyards affected by trunk diseases in its *Grapevine trunk disease – Best practice management guide*.

Reworking a vineyard is a significant financial decision for growers and requires careful consideration before commencement. Planning should begin well in advance, as some reworking requires cane and bud selection during the previous growing seasons. Most reworking commences post-harvest with removal of old cordons in warmer and dry conditions before the onset of winter. Protecting pruning wounds made during reworking is also best done during drier conditions.

How do I measure the success of reworking?

The success of reworking can be measured via four main factors: ▶



1. Initial strike rate (% of vines surviving reworking)
2. Percentage of fruiting wood versus potential area (linear metres)
3. Uniformity of vines post-reworking – gaps, vigour variation, etc.
4. Disease status and overall health and productivity of the reworked vines and their longevity.

In general, no reworking exercise will deliver a 100% gap-free vineyard. Most vineyards are at an age when reworking occurs that some vines have already perished or are better off being removed at reworking. Reworking success can be enhanced by forward-planning one to two years beforehand by retaining spurs and shoots on the trunk and in the crown to use for new trunks or cordons. These can be tagged and wrapped on drip wires or foliage wires to avoid being accidentally pruned or sprayed with herbicide. Following the first seasons of reworking, layering canes is a good option to fill in any remaining gaps. Researchers at SARDI have also found that grafting two buds into the trunk in late winter or spring enhances the overall strike rate of reworked vines.

How can you prolong the time before next needing to rework a vineyard?

Once a vineyard has been reworked, a management strategy should be implemented to prolong the benefits of that reworking investment. How the vineyard has been reworked will have a significant effect on the productivity and longevity of the reworked vines.

Among other factors, results will depend on:

- the amount of old, diseased wood remaining after reworking. Cuts made at least 20cm below any trunk disease infection will give maximum benefit to vines affected by *Eutypa* and *Botrytisphaeria*.
- how the vines are trained – the level of tightness when wrapping vines on the wire will influence the tolerance of cordons to trunk disease infection.
- ongoing management – vine balance, water availability, nutrition and most importantly, pruning technique and post-pruning fungicide application will all have a major impact on overall vine health.

Reworking can return a vineyard to improved productivity and profitability after one season in many cases. Careful

consideration of the best reworking option for each specific situation should deliver long-term benefits.

More information?

For more information about reworking vineyards or any other technical winemaking or viticulture question, contact the AWRI helpdesk on 08 8 313 6600 or helpdesk@awri.com.au

Additional resources

Baaijens, R. (2019) Post pruning and reworking management for reducing trunk disease infection and spread. AWRI webinar 13 June 2019. Available from: <https://www.youtube.com/c/TheAWRI>

Hoare, T. (2017) Reworking vineyards – why, when and how? Part 1. *Wine & Vitic. J.* 32(2):48-51.

Hoare, T. (2017) Reworking vineyards – why, when and how? Part 2. *Wine & Vitic. J.* 32(3):51-55.

Lecomte, P.; Diarra, B.; Carbonneau, A.; Rey, P. and Chevrier, C. (2018) Esca of grapevine and training practices in France: results of a 10 year survey. *Phytopathologica Mediterranea* 57(3):472-487.

Wine Australia (2019) Grapevine trunk disease – Best practice management guide. Available from: <https://www.wineaustralia.com/growing-making/pest-and-disease-management/eutypa-dieback>



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